
A New Species of *Rustia* (Rubiaceae, Rondeletieae) from Bilsa Biological Station, Esmeralda Province, Ecuador

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ABSTRACT. A new species of *Rustia* from Ecuador (Esmeraldas Province), *R. bilsana*, is described and illustrated. The new species is represented by trees endemic to the cloud forests of northwestern Ecuador, and is easily recognizable by having floral buds pointed at the apex, capsules widely obovoid, inflorescences 16–26 cm long, and purple corollas.

RESUMEN. Se describe e ilustra una nueva especie de *Rustia* del Ecuador (Provincia de Esmeraldas), *R. bilsana*. La nueva especie está representada por árboles endémicos de los bosques nublados del Noroeste del Ecuador, y es fácilmente distinguible por sus botones florales agudos, cápsulas anchamente obovoides, inflorescencias 16–26 cm de largo y corolas color púrpura.

Rustia is a genus of approximately 14 species of shrubs and trees, ranging from Costa Rica to southern Brazil. This genus is unique in having terminally poricidal anthers and pellucid-punctate leaves. Its sister genus, *Tresanthera*, is represented by trees endemic to the coastal forests of Venezuela and Trinidad and Tobago; it also has pellucid-punctate leaves but has laterally poricidal anthers. A full monographic treatment of *Rustia* is given by Delprete (in press–1999), and an account of the species present in Ecuador has been prepared by Delprete (1998). *Rustia* and *Tresanthera* have traditionally been placed in the tribe Condamineeae, but this tribe has been shown to be paraphyletic (Delprete, 1996b), and both genera are included in the tentatively delimited tribe Rondeletieae (Delprete, 1996b).

Ecuador has the highest number of species of *Rustia* (6 out of a total of 14), representing the center of diversity for this genus. The high degree of biodiversity in Ecuador is correlated with the varied vegetational zones present in the country, the adaptation of the species to certain ecological niches, and the latitude being near the equator. In the case of *Rustia*, one species (*R. occidentalis* (Benth.) Hemsley) is a shrub endemic to coastal swamps, two are trees found in the wet forests of the western slopes of the Andes (*R. alba* Delprete

from Carci Province and *R. bilsana* Delprete described below, from Esmeralda Province) and the remaining three (*R. schunkeana* Delprete, *R. viridiflora* Delprete, and *R. rubra* Standley ex D. Simpson) are trees occurring on the forested slopes of the Amazonian region.

During routine identification of Rubiaceae from Ecuador, while I was still a doctoral student at the University of Texas at Austin in fall 1995, a specimen (*Clark, Bass & Pitman 139*) of *Rustia* caught my attention. It was collected at the Bilsa Biological Station, and it was clearly an undescribed species of this genus. Several other species of *Rustia* occurring in Ecuador have recently been described (Delprete, 1995, 1996a), and the taxonomic position of the genus has been analyzed (Delprete, 1996b). The only specimen (*Clark et al. 139*) known to me in fall 1995 had inflorescences with only a few old flowers and immature fruits. One year later, John Clark returned to the original site in order to provide complete herbarium specimens (*Clark 2979*), pickled flowers for morphological studies, and photographs (see Fig. 2). The new species is still known only from the Bilsa Biological Station.

The Bilsa Biological Station is a nature preserve of approximately 2500 ha, with an altitudinal range from 300 to 800 m and is located in the Mache Mountains portion of the northwestern province of Esmeraldas. Bilsa was founded in 1994 by the Jatun Sacha Foundation in memory of the late biologists Al Gentry (botanist) and Ted Parker (ornithologist), who died in an airplane crash in the Ecuadorian mountains. This reserve represents one of the few remnant patches of premontane wet forest in northwestern South America, of which less than 1% remains. This premontane forest ecosystem is extremely endangered and quickly disappearing due to farming practices and indiscriminate logging. The Bilsa reserve houses a unique composition of flora and fauna, with elements related to both the coastal rainforest of Colombian Chocó Province and Andean cloud forests, and many of its species are rare or still unknown to science. The

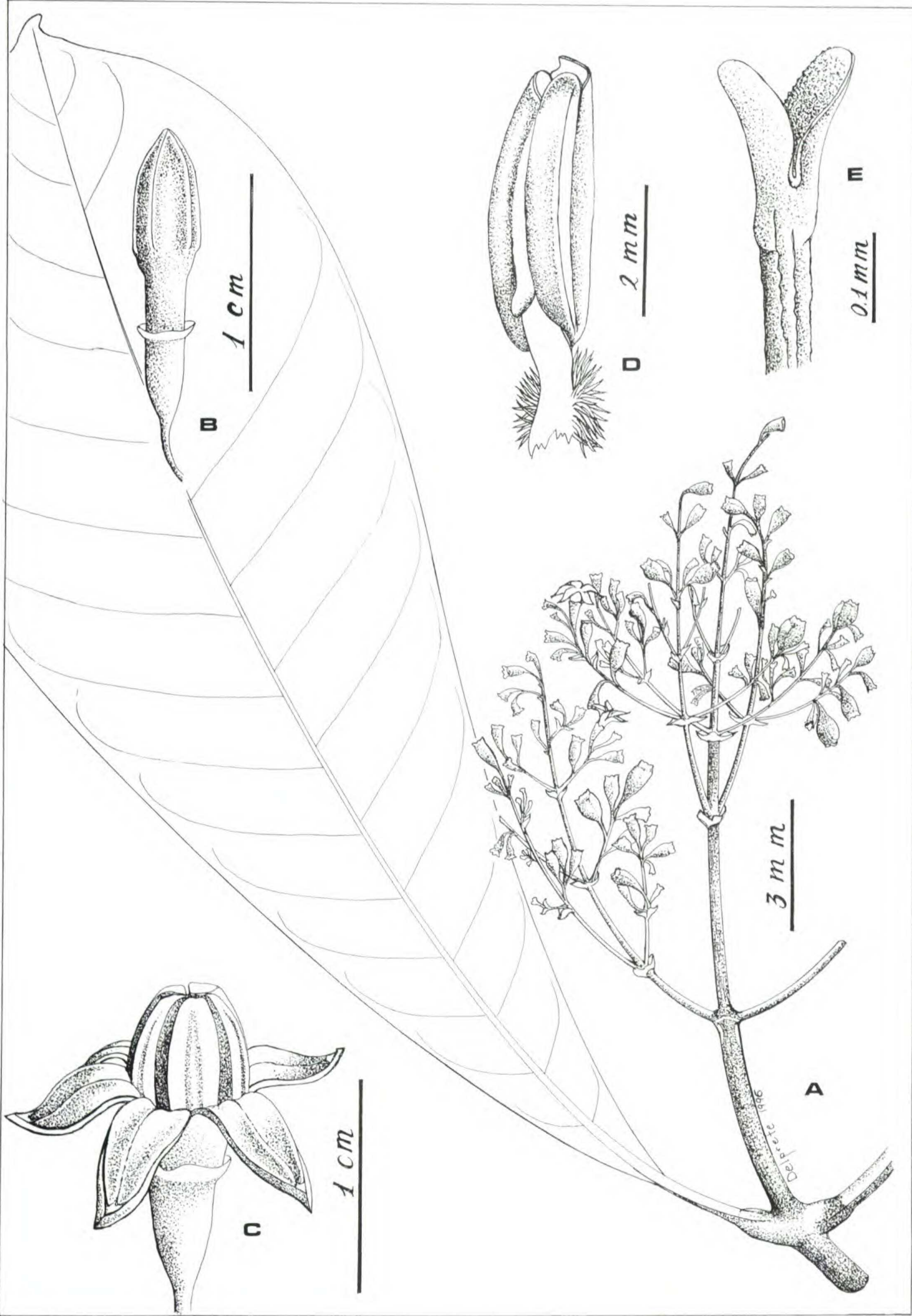


Figure 1. *Rustia bilsana* Delprete. —A. Habit of inflorescence with mature leaf. —B. Flower bud (note pointed apex and reduced calyx). —C. Flower in early stage of anthesis. —D. Anther. —E. Style. (Drawn from slides and type specimens: Clark 2979.)



Figure 2. *Rustia bilsana*. —A, B. Inflorescences of two specimens collected (Clark 2979) from the same tree (note the variation in size). —C. Stipules. —D. Detail of inflorescence branches with flowers in anthesis and immature fruits. —E. Close-up of the tip of an inflorescence branch, with flower buds and two open flowers, one in early stage of anthesis (top) and the other in later stage (below). Photos taken by John Clark.

arboreal species described below is one clear example of Bilsa's poorly studied biodiversity.

Rustia bilsana Delprete, sp. nov. TYPE: Ecuador. Esmeraldas: Cantón Quinindé, Bilsa Biological Station, Mache Mountains, 35 km W of Quinindé, 5 km W of Santa Isabel, along Cube River, premontane wet forest, 0°21'N, 79°44'W, 500 m, 2 Oct. 1996, *J. L. Clark* 2979 (holotype, QCNE; isotypes, AAU, CAS, COL, DAV, F, G, GB, GH, MO, NY, P, QCA, TEX, US). Figures 1, 2.

Arbor 19 m usque alta, ramis juvenilibus glabris; lamina oblanceolata, ad basin acuta, ad apicem rotunda acuminata, nervis lateralibus 15–18-paribus; domatia desunt; inflorescentiae paniculae pyramidales, 16–26 cm; gemma floris ad apicem acuminata; capsula late obovoidea, 7–8 × 6.0–6.5 mm, glabra; semina 0.6–1.2 × 0.3–0.5 mm.

Tree to 19 m tall, and to 47.5 cm diam. Young branches glabrous. Stipules narrowly triangular, 23–28 mm long, 6–8 mm wide at base, glabrous throughout, with a few colleters at base inside. Leaves 33–55 × 13–21 cm, oblanceolate (length/width 2.5:1), acute-decurrent at base, rounded and short-acuminate at apex, thick-chartaceous, glabrous above and below, secondary veins 15–18 pairs, faintly evident above and below; domatia absent; petioles 2.0–2.5 cm long. Inflorescences laxly paniculate and pyramidal, 16–26 cm long, the basal branches 9–12 cm long, the lateral branches 4–5 pairs. Flower pedicels 1–2 mm long, glabrous; flower buds cylindrical and pointed at apex; calyx 0.5–1.0 mm long, reduced to a wavy margin with barely distinguishable lobes, persistent. Corolla tubular with a basal constriction and reflexed lobes, 0.8–0.9 cm long, purple, semi-fleshy; tube 3.5–4.0 mm long, glabrous outside and inside; lobes 5.0–5.5 mm long, narrowly triangular and reflexed, glabrous outside and microscopically (40×) papillose at margins inside; lobes 2/3 of corolla length. Filaments attached ca. 4 mm from the base of the tube, 2 mm long, flattened and widened at base, with a tuft of antrorse and retrorse strigose hairs; anthers convex toward the center and rounded at base, 4.1–4.4 × 1.2–1.3 mm, dorsifixed near the base (thecae equal at base); style 9–11 mm long, glabrous, the stigmatic lobes ca. 1.5 mm long. Capsules widely obovoid, 7–8 × 6.0–6.5 mm, smooth (without lentils); capsule and disk glabrous. Seeds 0.6–1.2 × 0.3–0.5 mm.

Rustia bilsana (Figs. 1, 2) is similar to *R. alba*, from cloud forests at 1500–1700 m elevation in northwestern Ecuador, in having floral buds pointed

at the apex and widely obovoid capsules. The former differs from the latter in having leaves oblanceolate (vs. widely obovate), acute-decurrent at base (vs. acute-rounded); inflorescence 16–26 cm long (vs. 30–46 cm long); calyx reduced and with wavy margin (vs. cupular and with small lobes); corolla purple and 8–9 mm long (vs. white and 15–19 mm long); corolla lobes 5.0–5.5 mm long (vs. 9–11 mm long), glabrous inside (vs. densely ascending short-strigose at base); anthers half-exserted (vs. fully exserted and pendulous); style 9–11 mm long (vs. 16–20 mm long); style branches 1.5 mm long (vs. 3.0–3.5 mm long); capsules 7–8 mm long (vs. 8–12 mm long); and seeds 0.6–1.2 × 0.3–0.5 mm (vs. 2.25–2.90 × 0.65–0.95 mm).

This species is similar to *Rustia occidentalis* in having fleshy purple flowers, but differs from it in being a tall tree growing at medium elevations (vs. shrubs growing in lowland swampy areas), in having smaller flowers, flower buds pointed at the apex (vs. clavate), bigger and more branched inflorescences, and smaller capsules.

Paratype. ECUADOR. **Esmeraldas:** Cantón Quinindé, Bilsa Biological Station, Mache Mountains, 35 km W of Quinindé, 5 km W of Santa Isabel, premontane wet forest, 0°21'N, 79°44'W, 400–600 m, 3 Oct. 1994, *Clark, Bass & Pitman* 139 (MO, QCA, QCNE, TEX).

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